COURSE OUTLINE

EA303 – Wind Tunnel Laboratory

Fall 2003

Professor Rogers, Major Brown, Visiting Professor Birckelbaw, Asst. Professor Miklosovic

Recommended References:

Rae & Pope, *Low-Speed Wind Tunnel Testing*, 2nd ed., Wiley, 1984.
Pankhurst & Holder, *Wind-Tunnel Technique*, Pitman, 1952.
Abbott & von Doenhoff, *Theory of Wing Sections*, Dover, 1959.

Remark: Each section is divided into two groups designated A and B. Each week, one group will conduct an experiment in the wind tunnel while the other group stays in the classroom to formally present the experiment discussion and results of the previous weeks experiment using Power Point or transparencies and an overhead projector. Thereafter, if time permits, both groups are expected to remain in the classroom until the end of the period to work on their experiment reports and/or the assigned experiment homework to minimize their out-of-class workload.

Week	Date		Topic
1	Mon	8/19	Course introduction. Lecture: Pressure/Velocity Measurement, Turbulence Sphere
	Tue	8/20	Lab Group A, Pressure/Velocity Measurements/Turbulence Sphere – Eiffel tunnel
	Thur	8/22	Lab Group A, Pressure/Velocity Measurements/Turbulence Sphere – Eiffel tunnel
2	Mon	8/26	Lecture: Airfoil characteristics, effects of angle of attack
	Tue	8/27	Lab Group B, Pressure/Velocity Measurements/Turbulence Sphere – Eiffel tunnel
	Thur	8/29	Lab Group B, Pressure/Velocity Measurements/Turbulence Sphere – Eiffel tunnel
3	Mon	9/2	No Class – Labor Day Holiday
	Tue	9/3	Lab Group A, NACA 0012 and 4412 wings – Eiffel tunnel
	Thur	9/5	Lab Group A, NACA 0012 and 4412 wings – Eiffel tunnel
4	Mon	9/9	Lecture: Presentations
	Tue	9/10	Lab Group B, NACA 0012 and 4412 wings – Eiffel tunnel
	Thur	9/12	Lab Group B, NACA 0012 and 4412 wings – Eiffel tunnel
5	Mon	9/16	Lecture: Surface Pressure and Wake survey
	Tue	9/17	Lab Group A, Two dimensional wing – recirculating tunnel
	Thur	9/19	Lab Group A, Two dimensional wing – recirculating tunnel

6	Mon	9/23	Lecture: TBA
	Tue	9/24	Lab Group B, Two dimensional wing – recirculating tunnel
	Thur	9/26	Lab Group B, Two dimensional wing – recirculating tunnel
7	Mon	9/30	Lecture: Aspect ratio effects
	Tue	10/1	Lab Group A, Effect of aspect ratio, – NACA 0012 – Eiffel tunnel
	Thur	10/3	Lab Group A, Effect of aspect ratio, – NACA 0012 – Eiffel tunnel
8	Mon	10/7	Lecture: TBA
	Tue	10/8	Lab Group B, Effect of aspect ratio, – NACA 0012 – Eiffel tunnel
	Thur	10/10	Lab Group B, Effect of aspect ratio, – NACA 0012 – Eiffel tunnel
9	Mon	10/14	No Class – Columbus Day Holiday
	Tue (Mon)	10/15	Lecture: Effects of slats and flaps
	Thur	10/17	Lab Make up day
10	Mon	10/21	Lecture: TBA
	Tue	10/22	Lab Group A, Effects of slats and flaps, – NACA 0012 – Eiffel tunnel
	Thur	10/24	Lab Group A, Effects of slats and flaps, – NACA 0012 – Eiffel tunnel
11	Mon	10/28	Lecture: TBA
	Tue	10/29	Lab Group B, Effects of slats and flaps, – NACA 0012 – Eiffel tunnel
	Thur	10/31	Lab Group B, Effects of slats and flaps, – NACA 0012 – Eiffel tunnel
12	Mon	11/4	Lecture: Aircraft Scaling
	Tue	11/5	Lab Group A, Predicting Aircraft Scale Effects – Eiffel tunnel
	Thur	11/7	Lab Group A, Predicting Aircraft Scale Effects – Eiffel tunnel
13	Mon	11/11	No Class – Veterans Day Holiday
	Tue	11/12	Lab Group B, Predicting Aircraft Scale Effects – Eiffel tunnel
	Thur	11/14	Lab Group B, Predicting Aircraft Scale Effects – Eiffel tunnel
14	Mon	11/18	Lecture: TBA
	Tue	11/19	Lab Group A/B, Individual Experiment
	Thur	11/21	No Class – Thanksgiving
15	Mon	11/25	Lecture: TBA
	Tue	11/26	Lab Groups A/B, Individual Experiment
	Thur	11/28	Lab Groups A/B, Individual Experiment
16	Mon	12/2	Lecture: TBA
	Tue	12/3	Lab Groups A/B, Individual Experiment
	Thur	12/6	No Class
		12/5	**Individual experiment reports due**
	TBA		Final Exam